AMENDMENTS
In the Claims

Current Status of Claims

1.(currently amended)   A method of ~~assessing~~ improving coronary calcium imaging-based cardiac risk assessment implemented in a computer ~~based upon coronary calcification~~, comprising:

    a. ~~scanning a region of interest in a patient using computed tomography (CT);~~

    b. ~~storing CT generated data resulting from said scanning, the data comprising calcification data;~~

    ~~c~~a. analyzing ~~the data~~ CT generated images to determine a location, heterogeneity, shape, size, texture, and density gradient of each calcified spot in a patient's heart ~~a distribution of calcification in the patient;~~

    d. ~~locating an area of calcification within the distribution;~~

    b. analyzing CT generated images to determine a scatterness and a pattern of the multiple calcified spots;

    ~~e~~c. defining a ~~density distribution of calcification within the located area~~ risk score based on the analyzing step a and/or the analyzing step b; and

    f. ~~defining an anatomical distribution of the areas of calcification within the located area; and~~

    ~~g~~d. assessing the patient's risk of cardiovascular disease based upon said analyzing.

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1   35.(new)   The method of claim 1, further comprising

2   e.   categorizing an area of abrupt change in regional coronary elasticity as a high-risk

3   region.

1   36.(new)   The method of claim 1, wherein each location comprises a distance from a base or

2   apex of the patient's heart and proximal or distal segment of coronary arteries.

1   37.(new)   The method of claim 1, wherein each heterogeneity comprises variance in calcium

2   densities with its spot.

1   38.(new)   The method of claim 1, wherein each shape comprises a circular or angular spot

2   having concentric or eccentric character.

1   39.(new)   The method of claim 1, wherein each texture comprises a smooth or rough texture.

1   40.(new)   The method of claim 1, wherein each density gradient comprises a higher density core

2   or a higher density outer ring.

1   41.(new)   The method of claim 1, wherein the scatterness comprise interspot distance and the

Page 3

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2   pattern comprises variance of calcium densities among two or more spots.

1   42.(new)   The methods of claim 1, wherein the CT generated images are generated by electron

2   beam computed tomography (EBCT) or multi-detector spiral CT (MDCT).

42.(new)   The methods of claim 1, wherein the analyzing steps utilizes statistical determinants

including mean, median, mode, standard deviation, range, coefficient of variation, skew, or kurtosis,

or a combination thereof.

1   43.(new)   A method for improving coronary calcium imaging-based cardiac risk assessment,

2   implemented in a computer comprising:

3   a.   analyzing two or more sets of CT generated images of a patient obtained at two or

4   more time points to determine changes in a location, a heterogeneity, a shape, a size,

5   a texture, and a density gradient of each calcified spot in the patient's heart;

6   b.   analyzing the two or more sets of CT generated images of the patient obtained at the

7   two or more time points to determine changes in a scatterness and a pattern of

8   multiple calcified spots;

9   c.   defining a risk score based the analyzing step a and/or the analyzing step b; and

10   d.   assessing the patient's risk of cardiovascular disease based upon said analyzing.

1   44.(new)   The method of claim 43, further comprising

2   e.   using the changes in calcification density, heterogeneity, shape, size, texture, and

3   density gradient to assess the patient's risk of cardiovascular disease by relating the

4   changes in calcified spots to an outcome of a lesion.

1   46.(new)   The methods of claim 43, wherein the analyzing steps utilizes statistical determinants

2   including mean, median, mode, standard deviation, range, coefficient of variation, skew, or kurtosis,

3   or a combination thereof.

1   47.(new)   The method of claim 43, wherein each location comprises a distance from a base or

2   apex of the patient's heart and proximal or distal segment of coronary arteries.

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1   48.(**new**)   The method of claim 43, wherein each heterogeneity comprises variance in calcium
2   densities with its spot.

1   49.(**new**)   The method of claim 43, wherein each shape comprises a circular or angular spot
2   having concentric or eccentric character.

1   50.(**new**)   The method of claim 43, wherein each texture comprises a smooth or rough texture.

1   51.(**new**)   The method of claim 43, wherein each density gradient comprises a higher density
2   core or a higher density outer ring.

1   52.(**new**)   The method of claim 43, wherein the scatterness comprise interspot distance and the
2   pattern comprises variance of calcium densities among two or more spots.

1   53.(**new**)   A method of mapping comprising:
2   forming a map of a plurality of sections of coronary vessels as a function of the statistical
3   distribution of heterogeneity, shape, size, texture, and density gradient of calcified spots in each
4   sections, where the map is used to determine a progression of plaque and to categorize a patient's risk
5   of cardiovascular disease.